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MECHANICS.

103. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy, Irving College, Mechanicsburg, Pa.

If the sun were moved into the center of the earth's orbit, how much would the present length of the year be changed ?

104. Proposed by W. H. DRANE, Graduate Student, Harvard University, Cambridge, Mass.

A tight roll of very thin and perfectly flexible oilcloth is placed upon a rough inclined plane, a portion of the cloth being unrolled and, extending from underneath the roll, is spread out smoothly upon the inclined plane below. The roll is then allowed to descend under the action of gravity, picking up the cloth as it goes. Determine the motion as far as possible.

*** Solutions of these problems should be sent to B. F. Finkel not later than Dec. 10.

DIOPHANTINE ANALYSIS.

85. Proposed by A. H. BELL, Hillsboro, Ill.

Given $x^2 - 85\frac{1}{2}y^2 = 5$. What is the value of x and y in whole numbers ?

86. Proposed by B. F. FINKEL, A. M., M.Sc., Professor of Mathematics and Physics, Drury College, Springfield, Mo.

Prove that $x^2 + 1457 \equiv 0 \pmod{2389}$ is insoluble.

*** Solutions of these problems should be sent to J. M. Colaw not later than Dec. 10.

MISCELLANEOUS.

96. Proposed by H. M. CASH, Love City, Guernsey County, Ohio.

A stick of timber is 12 feet long, 8 inches deep, and 3 inches wide at one end; and 5 inches deep, and 12 inches wide at the other end. At what distance from either end should it be cut to divide it into two equal parts.

97. Proposed by G. B. M. ZERR, A. M., Ph. D., Professor of Chemistry and Physics, The Temple College, Philadelphia, Pa.

A spherical soap-bubble is electrified in such a way that the excess of the internal over the external air pressure is 2π when the bubble is in equilibrium. How does the tension of the film vary with the electric density ?

*** Solutions of these problems should be sent to J. M. Colaw not later than Dec. 10.

EDITORIALS.

Prof. John B. Faught, Instructor in Mathematics in the Indiana University, has been elected Professor of Mathematics in the Northern State Normal School, Marquette, Michigan.